Claims:

1.   (Currently amended)   A computer-readable storage medium having embodied thereon computer-executable instructions, the computer-executable instructions when executed at a peer comprising a computing device, configure the peer to perform actions for performing a method comprising:

querying, from the peer, an overlay network peer group for a first set of transport network distances between the overlay network peer group and one or more overlay network peer group neighbors of the overlay network peer group, wherein:

the overlay network peer group comprises one or more locality-aware peers each having locality-awareness comprising information regarding the one or more overlay network peer group neighbors and the one or more peers within the overlay network peer group; and

each of the one or more overlay network peer group neighbors of the overlay network peer group has a direct overlay network connection to the overlay network peer group;

measuring, at the peer, a second set of transport network distances from the peer to each of the one or more overlay network peer group neighbors of the overlay network peer group; and

determining, at [[a]] the peer, to join [[an]] the overlay network peer group if, for each transport network distance in the first set of transport network distances, an absolute value of a difference between the transport network distance in the first set of transport

network distances and a corresponding transport network distance in the second set of transport network distances is less than a threshold transport network distance value

~~a first set of transport network distances is physically or temporally near to a second set of transport network distances, the first set of transport network distances comprising at least one transport network distance between the overlay network peer group and at least one overlay network peer group neighbor of the overlay network peer group, and the second set of transport network distances comprising at least one transport network distance between the peer and said at least one overlay network peer group neighbor of the overlay network peer group, wherein the computer-readable storage medium further stores computer-executable instructions for:~~

~~(i) maintaining an intra-group cache comprising information regarding a first overlay network peer group in which the peer participates; and~~

~~(ii) maintaining an inter-group cache comprising information regarding at least one overlay network peer group in which the peer does not participate.~~

2.   (Cancelled).

3.   (Previously Presented) The computer-readable storage medium of claim 1, wherein a transport network distance between a first node and a second node in a transport network comprises a round-trip time for a message between the first node and the second node.

4.   (Previously Presented) The computer-readable storage medium of claim 1, wherein a transport network distance between a first node and a second node in a transport network comprises transport network latency between the first node and the second node.

5.   (Previously Presented) The computer-readable storage medium of claim 1, wherein a transport network distance between a first node and a second node in a transport network comprises a count of transport network routing hops between the first node and the second node.

6.   (Previously Presented) The computer-readable storage medium of claim 1, wherein:

each overlay network peer group comprises a peer group leader;

the transport network distance between the peer and an overlay network peer group comprises the transport network distance between the peer and the peer group leader of the overlay network peer group; and

the transport network distance between a first overlay network peer group and a second overlay network peer group comprises the transport network distance between the peer group leader of the first overlay network peer group and the peer group leader of the second overlay network peer group.

7.   (Cancelled).

8.	(Currently amended)	The computer-readable storage medium of claim 1, wherein the <u>actions further comprise</u> ~~method further comprises~~:

if the peer does not join the overlay network peer group, adding the ~~at least~~ one <u>or more</u> overlay network peer group <u>neighbors</u> ~~neighbor~~ of the overlay network peer group to a list of candidates; and

selecting ~~the nearest~~ <u>an</u> overlay network peer group <u>having the closest transport network distance from the peer</u> in the list of candidates as the next <u>overlay network peer group</u> to be considered for joining.

9.	(Currently amended)	The computer-readable storage medium of claim 8, wherein the <u>actions further comprise</u> ~~method further comprises~~ determining to establish a new overlay network peer group if, after testing each selected candidate, the peer has not joined an existing overlay network peer group.

10-17. (Cancelled).

18.	(Currently amended)	A computerized system, comprising <u>:</u>

<u>a processor;</u>

<u>a memory coupled to the processor; and</u>

a join locality-aware overlay module <u>stored on the memory and operable to configure the processor</u> ~~configured~~ to, at least, determine that an overlay network peer

joins ~~should join~~ an overlay network peer group, if, for each transport network distance in a first set of transport network distances, an absolute value of a difference between the transport network distance in the [[if a]] first set of transport network distances and a corresponding transport network distance in ~~is physically or temporally near to~~ a second set of transport network distances is less than a threshold transport network distance value, wherein:

the first set of transport network distances comprises transport network distances from the overlay network peer group to one or more overlay network peer group neighbors each having a direct overlay network connection to the overlay network peer group;

the second set of transport network distances comprises transport network distances measured from the overlay network peer to the one or more overlay network peer group neighbors; and

the locality-awareness for each peer in the overlay network comprises:

information regarding the one or more overlay network peer group neighbors; and

information regarding the one or more peers within the locality-aware overlay network peer group

~~, the first set of transport network distances comprising at least one transport network distance between the overlay network peer group and at least one overlay network peer group neighbor of the overlay network peer group, and the second set of transport network distances comprising at least one transport network distance between~~

the overlay network peer and the at least one overlay network peer group neighbor of the overlay network peer group, wherein the computerized system is further configured to:

(i) maintain an intra-group cache comprising information regarding a first overlay network peer group in which the overlay network peer participates; and

(ii) maintain an inter-group cache comprising information regarding at least one overlay network peer group in which the overlay network peer does not participate.

19.   (Cancelled).

20.   (Original) The computerized system of claim 18, wherein the join locality-aware overlay module is further configured to, at least:

query the overlay network peer group for the first set of transport network distances; and

measure each transport network distance in the second set of transport network distances.

21.   (Currently amended) The computerized system of claim 18, wherein the locality-awareness intra-group cache further comprises an ordered leadership list listing at least one overlay network peer in an overlay network peer group that will become, in the listed order, a leader of the overlay network peer group.

22.   (Original)   The computerized system of claim 18, further comprising an intra-group maintenance module configured to, at least, determine if a current leader of an overlay network peer group has left the overlay network peer group.

23.   (Currently amended)   The computerized system of claim 18, ~~further~~ comprising an inter-group cache that ~~wherein the inter-group cache further~~ comprises :

a list of at least one overlay network peer group neighbor of an overlay network peer group; and

for each neighbor in the list, a measured transport network distance between the overlay network peer group and the neighbor.

24.   (Original)   The computerized system of claim 18, further comprising an inter-group maintenance module configured to, at least, periodically measure a transport network distance between an overlay network peer group and each overlay network peer group neighbor of the overlay network peer group.

25-31. (Cancelled).

32.   (Currently amended)   A computer-implemented method, comprising:

determining a peer to join [[an]] a locality-aware overlay network peer group comprising one or more peers having locality-awareness of the overlay network peer group if, for each transport network distance in a first set of transport network distances,

an absolute value of a difference between the transport network distance in the [[a]] first set of transport network distances and a corresponding transport network distance in ~~is physically or temporally near to~~ a second set of transport network distances is less than a threshold transport network distance value, wherein:

the first set of transport network distances comprises transport network distances from the overlay network peer group to one or more overlay network peer group neighbors each having a direct overlay network connection to the overlay network peer group;

the second set of transport network distances comprises transport network distances measured from the peer to the one or more overlay network peer group neighbors; and

the locality-awareness for each peer in the overlay network peer group comprises:

information regarding the one or more overlay network peer group neighbors; and

information regarding the one or more peers within the locality-aware overlay network peer group

~~, the first set of transport network distances comprising at least one transport network distance between the overlay network peer group and at least one overlay network peer group neighbor of the overlay network peer group, and the second set of transport network distances comprising at least one transport network distance between a~~

~~peer and said at least one overlay network peer group neighbor of the overlay network peer group,~~

> ~~wherein the computer-implemented method further comprises:~~

> ~~(i) maintaining an intra-group cache comprising information~~

> ~~regarding a first overlay network peer group in which the peer participates; and~~

> ~~(ii) maintaining an inter-group cache comprising information regarding at least~~ ~~one overlay network peer group in which the peer does not participate.~~

33.   (Original) The method of claim 32, further comprising:

querying the overlay network peer group for the first set of transport network distances; and

measuring each transport network distance in the second set of transport network distances.

34.   (Original)   A computer-readable medium having thereon computer-executable instructions for performing the method of claim 32.

35-41. (Cancelled).

42.   (New)   The computerized system of claim 18, wherein a transport network distance between a first node and a second node in an overlay network comprises one or more of:

a round-trip time for a message between the first node and the second node;

transport network latency between the first node and the second node; and

a count of transport network routing hops between the first node and the second node.

43. (New) The method of claim 32, wherein a transport network distance between a first node and a second node in an overlay network comprises one or more of:

a round-trip time for a message between the first node and the second node;

transport network latency between the first node and the second node; and

a count of transport network routing hops between the first node and the second node